

*Amendments*

*In the Title:*

Please replace the title on page 1, line 8 with the following:

B1

Method for Mounting a Plurality of Spring Contact Elements

*In the Specification:*

Please replace pending page 2 with the following:

CROSS-REFERENCE TO RELATED APPLICATIONS

B2  
This patent application is a continuation-in-part of commonly-owned, copending U.S. Patent Application No. 60/034,053 filed 31 Dec 96, which is incorporated by reference herein. This patent application is also a continuation-in-part of commonly-owned, copending U.S. Patent Application No. 08/452,255 (hereinafter "PARENT CASE") filed 26 May 95, now U.S. Patent No. 6,336,269, and its counterpart/ PCT patent application number PCT/US95/14909 filed 13 NOV 95, both of which are continuations-in-part of commonly-owned, copending U.S. Patent Application No. 08/340,144 filed 15 Nov 94, now U.S. Patent No. 5,917,707, and its counterpart PCT patent application number PCT/US94/13373 filed 16 Nov 94, now WO Published Application No. 95/14314, both of which are continuations-in-part of commonly-owned, copending U.S. Patent Application No. 08/152,812 filed 16 Nov 93 (now USP 5,476,211, 19 Dec 95), all of which are incorporated by reference herein.

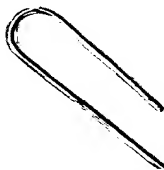
This patent application is also a continuation-in-part of the following commonly-owned, copending U.S. Patent Application Nos.:

08/526,246 filed 21 SEP 95, now abandoned, (PCT/US95/14843, 13 NOV 95);

08/533,584 filed 18 OCT 95, now U.S. Patent No. 5,772,451, (PCT/US95/14842, 13 NOV 95);

08/554,902 filed 09 NOV 95, now U.S. Patent No. 5,974,662, (PCT/US95/14844, 13 NOV 95);

08/558,332 filed 15 NOV 95, now U.S. Patent No. 5,829,128, (PCT/US95/14885, 15



NOV 95);

08/602,179 filed 15 FEB 96, now abandoned, (PCT/US96/08328, 28 MAY 96);

60/012,027 filed 21 FEB 96 (PCT/US96/08117, 24 MAY 96);

60/005,189 filed 17 MAY 96 (PCT/US96/08107, 24 MAY 96); and

60/024,555 filed 26 Aug 96,

all of which (other than the provisional patent applications) are continuations-in-part of the  
aforementioned PARENT CASE, and all of which are incorporated by reference herein.

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Please replace pending page 3, line 1 to page 4, line 30 with the following:

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Commonly-owned U.S. Patent Application No. 08/152,812 filed 16 Nov 93 (now USP 4,576,211, issued 19 Dec 95), and its counterpart commonly-owned copending "divisional" U.S. Patent Applications Nos. 08/457,479 filed 01 Jun 95 (now U.S. Patent No. 6,049,976) and 08/570,230 filed 11 Dec 95 (now U.S. Patent No. 5,852,871), all by KHANDROS, disclose methods for making resilient interconnection elements for microelectronics applications involving mounting an end of a flexible elongate core element (e.g., wire "stem" or "skeleton") to a terminal on an electronic component coating the flexible core element and adjacent surface of the terminal with a "shell" of one or more materials having a predetermined combination of thickness, yield strength and elastic modulus to ensure predetermined force-to-deflection characteristics of the resulting spring contacts. Exemplary materials for the core element include gold. Exemplary materials for the coating include nickel and its alloys. The resulting spring contact element is suitably used to effect pressure, or demountable, connections between two or more electronic components, including semiconductor devices.

Commonly-owned, U.S. Patent No. 5,917,707 and its corresponding PCT Patent Application No. PCT/US94/13373 filed 16 Nov 94 (WO95/14314, -published 26 May 95) [underlining from original deleted from previous part], both by KHANDROS and MATHIEU, disclose a number of applications for the aforementioned spring contact element, and also disclosed techniques for fabricating contact pads at the ends of the spring contact elements. For example, in Figure 14 thereof, a plurality of negative projections or holes, which may be in the form of inverted pyramids ending in apexes, are formed in the surface of a sacrificial layer (substrate). These holes are then filled with a contact structure comprising layers of material

such as gold or rhodium and nickel. A flexible elongate element is mounted to the resulting contact structure and can be overcoated in the manner described hereinabove. In a final step, the sacrificial substrate is removed. The resulting spring contact has a contact pad having controlled geometry (e.g., sharp points) at its free end.

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Commonly-owned, copending U.S. Patent Application No. 08/452,255 filed 26 May 95 and, now U.S. Patent No. 6,336,269, its corresponding PCT Patent Application No. PCT/US95/14909 filed 13 Nov 9 (WO96/17278, -published 06 Jun 96), both by ELDRIDGE, GRUBE, KHANDROS and MATHIEU, disclose additional techniques and metallurgies for fabricating contact tip structures on sacrificial substrates, as well as techniques for transferring a plurality of spring contact elements mounted thereto, en masse, to terminals of an electronic component (see, e.g., Figures 11A-11F and 12A-12C therein).

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Please replace the pending paragraph on page 7, lines 20-28 with the following:

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An exemplary application for the spring contact elements of the present invention is as probe elements used to effect pressure connections between a substrate and a device-under-test (DUT), in which case the spring contact elements are suitably mounted to a space transformer component of a probe card assembly, such as is described in the aforementioned **U.S. Patent No. 5,974,662** and **PCT/US95/14844**. Alternatively, the spring contact elements are mounted to and extend from an active electronic component such as an application specific integrated circuit (ASIC).

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Please replace the pending paragraph on page 14, lines 2-16 with the following:

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Commonly-owned, U.S. Patent No. 5,974,662 and its corresponding PCT Patent Application No. PCT/US95/14844 filed 13 Nov 95 (WO96/15458, -published 23 May 96), both by ELDRIDGE, GRUBE, KHANDROS and MATHIEU, disclose a probe card assembly which includes elongate resilient (spring) contact elements mounted to a "space transformer" component. As used herein, a space transformer is a multilayer interconnection substrate having terminals disposed at a first pitch on a one surface thereof and having corresponding terminals disposed at a second pitch on an opposite surface thereof, and is used to effect "pitch-spreading" from the first pitch to the

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only

second pitch. In use, the free ends (tips) of the elongate spring contact elements make pressure connections with corresponding terminals on an electronic component being probed (e.g., tested).

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